

PRELIMINARY DRAFT SCOPE OF WORK

2.0 Scope of Work – The CONSULTANT agrees to perform, at the direction of the DEPARTMENT, the services described below:

2.1 All work associated with the preparation of a Phase I Combined Design Report involving the reconstruction of U.S. 20 including additional lanes between IL 2 and I-39. Reconstruction of the I-39/US 20, US 20/Alpine Road, and US 20 /IL 251 interchanges is also included.

The Phase I report will include an evaluation of up to four alternatives for adding additional travel lanes on US 20 within the project limits and will identify the preferred alternative based on comparative analysis of cost, impacts, and engineering considerations.

This work will include:

- A. Basic Data Collection;
- B. Supplemental Field Surveys;
- C. Soil Analysis and Report for Structures;
- D. Interchange Type Studies for Three Interchanges;
- E. Interchange Design Studies for Three Interchanges;
- F. Access Justification Reports
- G. Development of Horizontal and Vertical Alignments;
- H. Geometric Design;
- I. Hydraulic Reports and Drainage Studies;
- J. Type, Size and Location (TS&L) Drawings, including Structure Reports;
- K. Determination of Right-of-Way Needs and Property Owner Information;
- L. Public Involvement Activities;
- M. Preparation of a Combined Design Report and All Necessary Associated Work; and
- N. Preparation of an Environmental Class of Action Determination (ECAD) Document.

The following structures are included in the project limits.

- S.N. 101-0055 – US 20 EB over IL 2
- S.N. 101-0056 – US 20 WB over IL 2
- S.N. 101-0057 – US 20 EB over Rock River (west)
- S.N. 101-0058 – US 20 WB over Rock River (west)
- S.N. 101-0059 – US 20 EB over Rock River (east)
- S.N. 101-0060 – US 20 WB over Rock River (east)
- S.N. 101-0061 – US 20 EB over Kishwaukee Street
- S.N. 101-0062 – US 20 WB over Kishwaukee Street
- S.N. 101-0063 – US 20 EB over BNRR
- S.N. 101-0064 – US 20 WB over BNRR
- S.N. 101-0065 – US 20 EB over IL 251/11th Street
- S.N. 101-0066 – US 20 WB over IL 251/11th Street
- S.N. 101-0116 – 20th Street over US 20
- S.N. 101-0151 – Alpine Road over US 20
- S.N. 101-0135 – I-39 NB over US 20
- S.N. 101-0137 – US 20 EB to I-39 SB over Linden Road

Approximate section line and property owner information shall be obtained from the County's GIS database. Further work associated with the preparation of right-of-way documents is not included in the scope of this initial agreement. This work, if required, will be negotiated as a supplement to the agreement at a later date.

Progress Reports will be submitted on a monthly basis and will include a statement summarizing the work performed during the report period and an outline of the work expected to be performed during the following period.

The written authorization per Section 2.85 must be signed by the Bureau Chief. The Bureau Chief is the Engineer of Design and Environment in the Central Office.

2.11 The CONSULTANT is responsible for preparing the Combined Design Report in accordance with the Bureau of Design and Environment Manual, latest version, and with the Policies and Provisions outlined and listed in Section 2.27 of the STANDARD PROVISIONS.

2.12 An outline of general responsibilities for the DEPARTMENT and the CONSULTANT to complete the Project Reports follows:

A. Survey:

1. The DEPARTMENT shall provide:
 - a. target diagrams
 - b. specific instructions regarding project location
2. The CONSULTANT shall be responsible to complete each project in accordance with Chapter Four "Photogrammetric Surveys" of the current Illinois Design and Environment Manual, and the Specifications for GPS Surveys Appendix F (copies of which have been provided to the consultant) as listed below:
 - a. Horizontal
 - i. Traverses shall begin and close on Published NGS control stations.
 - ii. Coordinates are to be Illinois State Plane, West Zone and referenced to the NAD (North American Datum) 83(1997), or most current datum, First (1st) Order or higher only.
 - iii. All Traverse Points are to be located using GPS Equipment to the Standards stated in the current Design and Environment Manual Appendix F.
 - iv. Traverse Stations shall be marked by iron pins 5/8" x 30", unless discussed with District and other marks are approved on a project-by-project basis.
 - v. Traverse Stations will have swing ties set and located with coordinates.
 - b. Vertical
 - i. The NAVD (North American Vertical Datum) 88 vertical datum shall be used.
 - ii. Vertical data will be referenced to published NGS vertical control stations, only 1st or 2nd Order monuments will be used.
 - iii. Bench Marks established shall be to third order accuracy (0.012√K).
 - iv. Bench Marks shall be described with a "To Reach" description and located with coordinates.

- v. All level lines shall be run using an electronic level.
- c. Land Section Surveys (Only if added by supplement)
 - i. All Land Section survey work shall be referenced to Illinois State Plane Grid coordinates, West Zone, most current published datum.
 - ii. Adhere to all current District Land Acquisition policies.
- d. Material to be Delivered:
 - i. All original horizontal and vertical field notes shall be submitted to the Department upon completion of the project.
 - ii. Print outs of traverses with closure information shall be submitted.
 - iii. All level notes shall be reduced and adjustments made to all control points.
 - iv. New Bench Marks shall be marked to accommodate third order standards: chiseled squares in concrete, railroad spikes in base of power poles (only as a last resort), etc.
 - v. All raw data from GPS shall be submitted in either Rinex or Leica format.
 - vi. All computed and balanced horizontal control information shall be submitted to the Department on diskette or cd.
 - vii. All electronic level notes shall be submitted to the Department on diskette or cd.
 - viii. All finished data shall be submitted to the Department in GeoPak and Microstation format.

B. Compilation of Data:

1. The DEPARTMENT shall provide:
 - a. Existing roadway plans (where available).
 - b. Existing bridge plans (where available).
 - c. Highway classifications.
 - d. Traffic volumes (current and design year), including turning movements at interchanges and intersections.
 - e. Traffic accident statistics.
 - f. Soil survey (where required).
 - g. Structure borings.
2. The CONSULTANT shall:
 - a. Gather data including land use maps, zoning maps, flood insurance, bus, emergency, and mail routes, school district, , park district and fire district maps, GIS information and any other data required to define the extent and use of the project study area and to complete the study.
 - b. Use the existing plans and survey data to study the existing horizontal and vertical alignments and existing drainage patterns.
 - c. Analyze the accident statistics and prepare an Accident Analysis Report evaluating the data and providing specific safety improvement recommendations as appropriate.
 - d. Gather and evaluate all available data to determine appropriate design parameters and to identify any issues that may drive the technical analysis or public involvement activities.

C. Geotechnical Reports:

1. The DEPARTMENT shall:

- a. Conduct soil and structure borings and required field and laboratory analysis.
- b. Provide boring logs.
- c. Complete roadway geotechnical analysis and report in accordance with Section 5.2 of the Geotechnical Manual including consideration of subgrade stability, slope stability, drainage requirements, and frost susceptibility.

2. The CONSULTANT shall:

- a. Provide an analysis comparing alternatives for pavement reconstruction including total pavement reconstruction vs. overlay options. Provide a summary report including an analysis of any effects on roadway profiles and structural clearances, effects on maintenance of traffic, and a comparison of cost differentials for the alternatives. Provide a recommendation including all supporting information necessary to justify the preferred alternative.
- b. Complete structure geotechnical analysis and report for the structures listed in section 2.1 with the exception of structures 101-0055 and 101-0056. Include consideration of foundation type and capacity, settlement, global stability of end slopes at bridge and culvert wing walls, and seismic issues including liquefaction potential.

D. Public Involvement Activities:

The CONSULTANT shall organize, facilitate, and prepare display materials for two (2) public informational meetings. Two (2) dry runs of the public meeting presentation will be conducted by the CONSULTANT at the District Office approximately 2 weeks prior to the public informational meetings for review and comment by the DEPARTMENT. Preparation of all necessary materials and audio/visual products is included in the scope of work. Direct Costs associated with the meetings, including the site fees, newspaper advertisements and a court reporter (if necessary) are also included in this scope.

1. The DEPARTMENT shall as required:

- a. Schedule all meetings requested by property owners.
- b. Coordinate property owner replies and provide summary to the CONSULTANT.
- c. Provide inter-departmental coordination as needed for development and maintenance of the Project Website.

2. The CONSULTANT shall:

- a. Provide names and addresses of all affected property owners.
- b. Prepare and mail property owner contact letters.
- c. Provide necessary exhibits for display during the public meetings and or any other public agency coordination and for inclusion with mailings to property owners. Exhibits should be electronically prepared with standard symbology and include, project baselines for alternates studied, existing right-of way, proposed right-of way as applicable, pertinent land usages, environmentally

sensitive areas, project limits, and any other items necessary to accurately depict the scope and nature of the project.

- d. investigate any alternative designs to be considered on the basis of property owner requests
- e. Create, maintain, and update as necessary a project web site that will allow property owners to obtain project information.
- f. A Public Hearing is not included in this scope of services.

E. Base Maps:

1. The CONSULTANT shall:

- a. Prepare the plans using versions of Microstation and Geopak software currently utilized by the Department (V8). Existing information will be furnished in this format, if available.
- b. draft existing alignment, right-of-way, drainage data and property ownership, locate trees
- c. Determine need for additional surveys. Additional surveys requiring extra work shall not be initiated until authorized by the DEPARTMENT.

F. Design Location Studies:

1. The DEPARTMENT shall provide:

- a. Unit cost for pay items submitted by CONSULTANT.
- b. Utility contacts and relocation costs.
- c. Report format to be used.
- d. Reviews as necessary.
- e. Accident and traffic data.
- f. Concurrence with Categorical Exclusion class if applicable.
- g. Primary coordination with the appropriate emergency services, school districts and postal service if the highway is closed or staging would restrict wide vehicles such as a fire truck, or a school bus.
- h. Primary coordination with the cities, townships, counties and drainage districts.
- i. Primary coordination with the railroads and the Illinois Commerce Commission.

2. The CONSULTANT shall:

- a. Study the horizontal and vertical alignment, identify deficiencies and design the proposed alignments to meet the requirements of the Bureau of Design and Environment Manual. Include consideration of freeboard, low beam, and vertical clearance requirements. Document and justify any exceptions to policy including providing an analysis of additional cost required to meet policy.
- b. Prepare typical sections as necessary including approximately four existing typical sections and four proposed typical sections for the mainline (US 20). Prepare approximately three existing and three proposed typical sections for each cross road and interchange ramp. Typical sections should include approach roadway and typical section across the structures as applicable.
- c. Evaluate potential alternatives, provide a comparison of up to four design alternatives, and identify the preferred alternative based on cost, impacts and design considerations.

- d. Prepare and submit earthwork cross sections at 100 ft. intervals along the US 20 mainline and at 50 ft intervals for all ramps, cross roads or other proposed roadways within the project limits. Additional cross sections should be provided at side roads, entrances and drainage structures. Cross sections shall be of sufficient detail to accurately determine final construction limits, and to calculate earthwork quantities. Ditch bottom elevations and slopes of any across-road drainage structures shall be shown so that adequate roadside drainage can be verified.
- e. Determine proposed right-of-way and easement requirements in accordance with guidelines provided by the DEPARTMENT.
- f. Prepare plan and profile sheets at a scale of 1 in. = 200 ft showing existing and proposed alignments, access changes, proposed right-of-way and/or easement, drainage details, property ownership (including approximate property lines and names), construction limits, removal items, and topo survey for the project length using Microstation and Geopak software. Provide digital files to the DEPARTMENT.
- g. Analyze accident history provided by the DEPARTMENT and develop recommendations for improved safety measures.
- h. Develop a Traffic Management Analysis (TMA) and a Traffic Management Plan (TMP) to address construction sequence, maintenance of traffic, work zone safety, and mobility during construction. This will include staging, evaluation of any potential detour routes, and preliminary design of temporary runarounds or median crossovers, if any. Maintenance of traffic and work zone safety will be studied according to the most recent version of the Safety Engineering Policy Memorandum, which presents the FHWA's Work zone Safety and Mobility Rule. The CONSULTANT will utilize a TMP format as provided by the DEPARTMENT.
- i. Complete barrier warrant analyses.
- j. Compute preliminary construction quantities and prepare an opinion of probable cost using unit costs provided and/or reviewed by the DEPARTMENT.
- k. Determine any necessary utility adjustments based on location information provided by utility companies and survey data.
- l. Provide layout alternatives and preliminary structure design for proposed noise walls within the Project Limits.
- m. schedule field reviews and other coordination meetings as needed with IDOT personnel and its representatives

G. Structures:

For the structures listed in section 2.1:

- 1. The DEPARTMENT shall provide:
 - a. Approved Bridge Condition Report
 - b. Existing bridge plans where available.
 - c. Structural borings where required.
 - d. Structural ratings and structure numbers.
 - e. Previously developed hydraulic data where available.
- 2. The CONSULTANT shall:
 - a. Based on review of the Bridge Condition Report (BCR) provided by the Department, determine whether the existing structure or any portion of the existing structure is suitable for re-use. For those structures where structural

rehabilitation is deemed a viable option in the BCR, complete an analysis based on cost, potential impacts and engineering considerations comparing rehabilitation to complete replacement. The BCR recommendations are preliminary and should be followed only if supported by hydraulic analysis and consultant affirmation. The Consultant may make an independent recommendation if supported by additional findings or considerations.

- b. Determine if stage construction is feasible for any proposed replacement or rehabilitation scenario
- c. Determine the load carrying capacity of any proposed stage construction that utilizes a portion of the existing structure and submit calculations to the BBS.
- d. Prepare preliminary bridge sketches.
- e. Prepare Structure Reports and TS&L drawings in accordance with the appropriate portions of the BDE and Bridge Manual.
- f. Determine locations of additional structural borings, if required, and furnish to the Department.
- g. Revise and finalize TS&L drawings per DEPARTMENT comments.

H. Drainage Studies:

1. The CONSULTANT shall:

- a. Make necessary hydraulic surveys where required and as directed by the District Hydraulic Engineer
- b. Conduct drainage studies in accordance with the IDOT Drainage Manual and Chapter 40 of the BDE Manual.
- c. Research and collect available drainage information from the DEPARTMENT and various other sources including drainage districts, local agencies, and information available via site visit. (Initial/primary contact by the DEPARTMENT.)
- d. Define existing drainage patterns and flows.
- e. Identify and analyze any flooding problems.
- f. Compile drainage calculations.
- g. Prepare drainage studies including hydraulic analysis of drainage features associated with the project. The study should include an investigation of existing drainage patterns, evaluation of floodplain impacts, permitting requirements, identification of drainage paths, highest known water levels, reports on flooding of adjacent properties and roadway facilities, and outlet conditions, as applicable. The study should document the overall drainage plan for the project including culvert sizing, width and depth of ditches, detention storage sheet flow areas, etc.
- h. Prepare a Hydraulic Report according to the format guidelines provided by the DEPARTMENT at each of four locations: US 20 eastbound over Rock River west branch (S.N. 101-0057), US 20 westbound over Rock River west branch (S.N. 101-0058), US 20 eastbound over Rock River East Branch (S.N. 101-0059), US 20 westbound over Rock River East Branch (S.N. 101-0060). Supporting calculations should be included in the report.

I. Interchange and Intersection Studies:

1. The CONSULTANT shall:

- a. Prepare Interchange Type Studies (scale 1-inch equals 200ft.) according to Chapter 15 of the BDE Manual for the U.S. 20/ IL 251 /11th Street, US 20/Alpine Rd, and I-39/US 20 interchanges. At least three alternatives shall

be evaluated for each interchange with alternative schematics prepared on separate aerial mosaics. Identify the preferred alternative and provide rationale used in the selection of the preferred alternative.

- b. Prepare Access Justification Reports according to Federal Highway Administration (FHWA) Guidelines for the U.S. 20/ IL 251 /11th Street, US 20/Alpine Rd, and I-39/US 20 interchanges as outlined in BDE 7-1.03.
- c. Prepare Interchange Design Studies according to Chapter 15 of the BDE Manual for the U.S. 20/ IL 251/11th Street, US 20/Alpine Rd, and I-39/US 20 interchanges. An overall view of the interchanges shall be provided at a scale of 1 inch equals 200 ft. on the initial sheet. Subsequent sheets shall cover all portions of the interchange at a scale of 1 inch equals 50 feet, and shall include proposed profiles. Controlling cross sections shall be prepared at a scale of 1-inch equals 10 ft (horizontal) and 1 inch equals 5 feet (vertical).
- d. Prepare Intersection Design Studies according to Chapter 14 of the BDE Manual for the following intersections: Alpine Road/Sandy Hollow, Alpine Rd./Linden Rd, 11th St/Sandy Hollow and 11th St./Airport Dr. Sheets shall cover all portions of the intersections at a scale of 1 inch equals 50 feet, and shall include proposed profiles at a scale of 1 inch equals 50 ft (horizontal) and 1 inch equals 5 feet (vertical).
- e. Address all comments provided by the DEPARTMENT and the FHWA and provide final Mylar copies of the Interchange and Intersection Design Studies for approval.

J. Preliminary Combined Report:

1. The DEPARTMENT shall provide:
 - a. Required format and forms for the project.
2. The CONSULTANT shall prepare:
 - a. Drafts of the preliminary report shall be submitted (three copies) for an early review. The Combined Design Report shall be prepared in accordance with Chapter 12 of the BDE Manual.
 - b. Five copies of the complete preliminary Combined Design Report (including reduced exhibits).

K. Final Combined Design Report:

1. The DEPARTMENT shall:
 - a. Review public involvement activities.
 - b. Make recommendations.
 - c. Provide Comments on the preliminary report
 - d. Provide all coordination documents.
2. The CONSULTANT shall:
 - a. Prepare disposition of comments and make appropriate revisions to the preliminary report.
 - b. Print ten copies of the final report, including all additional information furnished by the DEPARTMENT after notification of Design Approval.

L. Environmental Class of Action Determination (ECAD) Record:

1. The CONSULTANT shall prepare an ECAD Record in accordance with Department Guidelines.
 - a. Inventory affected environmental and prepare Purpose and Need Statement.
 - b. Assess environmental consequences for two build alternatives.
 - c. Develop mitigation concepts. Tree impacts will be determined from plan sheets. No field survey required.
2. The CONSULTANT shall complete a noise analysis in accordance with current BDE and FHWA guidelines. Specific tasks will include measurement of existing noise levels, identification of land uses, noise-modeling predictions for the design year, identification of any necessary noise abatement options, and documentation included in the design report.
3. The DEPARTMENT shall provide:
 - a. FEMA and NWI maps in electronic format and threatened and endangered species coordination with IDNR.
 - b. Test and wetland bank documentation for wetland impacts.
 - c. PESA from the ISGS.
 - d. Required environmental agency sign-offs.

M. Coordination:

The CONSULTANT shall attend up to three FHWA/BDE coordination meetings and up to four additional coordination meetings with District personnel. These meetings will be held in the District 2 Offices in Dixon, IL. In addition, the CONSULTANT shall attend two Local Agency coordination meetings at the Project Site and/or Local Agency offices in Rockford, IL.

N. QA/QC:

1. The CONSULTANT shall follow all requirements of their QA/QC policy as approved by the DEPARTMENT.

O. Administration:

1. The CONSULTANT shall:
 - a. Review billing once per month.
 - b. Prepare monthly project status reports.
 - c. Prepare monthly invoices.
 - d. Prepare all meeting minutes.
 - e. Perform general project administration activities.

Typical work activities not described in this outline for the Project Reports that are necessary to the development of the project are the CONSULTANT'S responsibility. All specific instructions listed in the minutes of the Pre-Negotiation Meeting, any attachments to these minutes, and applicable sections of the CONSULTANT and SUBCONSULTANT man-hour preparations as agreed to by the DEPARTMENT shall also be considered part of this AGREEMENT.

3.0 Commencement Schedule. The CONSULTANT shall commence work within five calendar days after date of authority to proceed. The work shall be completed and delivered to the DEPARTMENT as set forth below and as shown on the project schedules completed by the CONSULTANT and approved by the DEPARTMENT.

Phase 1 work to be completed with 24 months after authorization to proceed.

Project schedules shall be submitted by CONSULTANT identifying project tasks and milestones towards successful completion of Project.

Ratings. Timeliness in meeting the project schedule is a factor that will be considered in the CONSULTANT'S performance rating. An unfavorable performance rating is a penalty that will be reflected when future assignments are being considered.

Completion. The date for use in closing out this Agreement is 1/1/2014 (five years after date we expect to proceed). This includes all work completed, invoices submitted and paid and all audits completed.